Curriculum Vitae
Sri Muthu Narayanan Balasubramanian
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EDUCATION

B.E, Electrical and Electronics Engineering   **2009-2013**

College of Engineering Guindy, Anna University, Chennai
First Class with CGPA - 8.2

Higher Secondary Education   **2007-2009**

Tamil Nadu Board of Higher Secondary Education
SRV Boys Higher Secondary School, Namakkal
First Class with **Distinction** (Aggregate of 97.58%)

WORK EXPERIENCE

Associate Engineer, Electronics and Systems Integration,   **July '13 till date**
Caterpillar Inc.

Summer Internship at Insystronics Technologies   **May '12**

TEST SCORES

Graduate Records Examination (GRE)   **Aug '14**

Quantitative Reasoning: 167   Verbal Reasoning: 162   Analytical Writing: 5.0

TOEFL (iBT)   **Aug '14**

Reading: 29   Listening: 30   Speaking: 28   Writing: 30   Total: 117

PROJECTS

Primary Display Module Application development (Caterpillar)   **Aug '13 till date**

- Working on Application source code development in Embedded C for Primary Display ECU (Electronic Control Unit) for Articulated Trucks and Motor graders.
- Currently working on implementation of calibration protocol for Motor Graders.

Data Link simulator for Hardware-In-Loop (HIL) simulations (Caterpillar)   **Jan '14 till date**

- Currently working on the research project in developing customized data link simulator with multiple protocol support (including CAN/J1939 public and proprietary protocols) for HIL simulations during development and testing of ECUs.
- Working on the implementation using Zero Message Queue (ZMQ) high performance asynchronous messaging library.

Display ECU Test automation (Caterpillar)   Dec '13

- Spearheaded the project for automation of the HIL testing of Display ECUs.
- Onscreen data capture and validation implemented using customized OCR software.
- Test scripts were implemented in Python.

Condition monitoring and fault diagnosis of Induction motors   May '13

(Undergraduate final year project)

- Sensor data acquisition, Feature extraction, trend analysis and characterization for fault prediction in industrial induction motors.
- Cost effective monitoring and proactive warning system to minimize downtime.
- Secured "S" grade (10/10 points) for the project.

Rubik's cube solver   Dec '12

(Winter vacation project)

- An autonomous solver that can mechanically solve a 3x3 Rubik's cube.
- Designed and built the setup using three individual 2-DOF servo manipulators.
- The algorithm was implemented using OpenCV on the RaspberryPi board.

Self adjusting podium microphone   Nov '12

(Winter vacation project)

- Designed and built a low-cost self adjusting podium microphone.
- Implemented the face detection and tracking using Haar cascade filters in OpenCV on the RaspberryPi processor board.

Automated 3-DOF Robotic Arm   Sep '12

- Dynamic model was created using SIMULINK and the position data for the servo motors were wirelessly transmitted to the Arduino controlled robotic arm.
- The fully automated arm can draw basic shapes and alphabets.

Tire Pressure Monitoring System   May '12

(Insystronics Technologies, Embedded systems design company)

- Involved in the development of cost effective prototype Tire Pressure Monitoring System for budget cars.
- Worked on sensor data acquisition and indication system design.

Automated Guided Vehicle   Feb '11

(Funded by CEG Tech forum - the Mega project during Kurukshetra 2011)

- A fully autonomous, self-guided industrial robot for industrial applications.
- Worked on the design of electronics and path planning algorithm.

Line Follower with vision based obstacle avoidance   Oct '10

(University Grants Commission sponsored project)

- An autonomous line follower robot with camera module for obstacle avoidance.
- Image processing for obstacle avoidance was implemented using MATLAB.

TECHNICAL SKILLS

Simulation and modeling	: MATLAB, Vector tools (CANalyzer/CANoe)
Programming	: Python, C, C++, Java, VBA, Embedded C
Platforms	: Windows, Linux (Ubuntu), WinCE
Miscellaneous	: Pspice, DesignSpark PCB, OpenCV, NI Vision

AREAS OF INTEREST

- Intelligent Transport systems
- Embedded systems and software
- Robotics, Automation and Computer Vision
- Control systems

ORGANIZATIONAL ROLES

- Co-founder of Illuminati, a tech hub for spreading technical knowledge through workshops.
- President of The Robotics Club of CEG.
- Student Director at the CEG Tech Forum.
- Secretary of Sruthilaya, the light music orchestra of CEG.

AWARDS AND ACHIEVEMENTS

- Recipient of Government of India Scholarship throughout under graduate course for ranking among the top 0.1% in the state's high school board exam.
- Ranked in the top 0.02% of TamilNadu Engineering admission applicants in 2009.
- Competitively awarded the sponsorship for a project during second year by The University Grants Commission (UGC).
- Winner of various robotics and circuit debugging contests at National level technical symposiums around the country.

OTHER SKILLS AND ACTIVITIES

- Holder of **Performer's Certificate**(Grade 7) in **Digital Keyboard**, Trinity College of music, London.
- Trained **6 Sigma Green Belt.**
- Trained in AGILE Mindset and Practices.
- Volunteer at Chinmaya Mission, an international socio-cultural non-profit organization.

CONTACT INFORMATION

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